Huntsman – Conroe, Texas Facility
Additional Facility-Specific Responses and Information
MON Residual Risk and Technology Review

1) Predominant use analysis for storage vessel and transfer operations.

EPA inquired about applicability determinations made for ethylene oxide (EO) storage vessel and transfer operations, which serve multiple process units at the Conroe plant. These facilities were assigned to process units based on predominant use, to address regulatory overlap between HON, MON, and the Polyether Polyol MACT (PPP). In the case of EO, the operative citation is 63.1420(f)(3) because Subpart PPP is the predominant use.

To determine the predominant use, the five-year production history for products made at the site were summarized by process unit. We then identified the consumption of EO for each. These were totaled by process unit so that EO consumption by unit was available. The current analysis (based on 2015-2019 production data) is summarized in the table below:

Process Unit	2015-2019 EO Percentage[1]	Applicable MACT Standard
AAU	25.9%	MON
CARB 1/2	16.9%	HON
D&G Kettles	55.6%	Polyether Polyol MACT (PPP)
SAU	1.5%	MON
Total	**100.0%**	**See above**

Because the predominant use of EO is to feed the D&G Kettles area, the storage vessels and transfer operations are assigned to those production units, which produce polyether polyols and are regulated under the Polyether Polyol MACT (PPP).

2) Description of the wastewater ponds and clarification of previously reported emissions data.

The Conroe plant operates a treatment system for process wastewater. The system consists of 9 sequential ponds (numbered 3 through 11) with biotreatment, aeration, and settling divided between the ponds. There is also a firewater pond with an outfall into Pond 7. The firewater pond receives water from excess groundwater production, steam condensate, and reverse osmosis reject water. Process wastewater enters Pond 3 to begin treatment.

During the air permitting process for the plant, water samples were taken at various sumps and collection points in the facility and analyzed for EO. Engineering estimates were made of the maximum potential emissions of EO from the ponds based on those analyses. Those calculations were overly conservative as they were assessing potential MACT applicability, and relied upon EPA wastewater models that estimated a high fraction was volatilized and emitted. The models did not account for the reactivity of the residual EO in the water to form glycols. The Conroe plant has reported an annual average based on the same conservative EO emissions from the ponds in the

[1] Percentages (rather than mass) were used to limit the inclusion of Confidential Business Information (CBI).

emissions inventory. Thus, the values reported in previous emissions inventories significantly overstate actual EO emissions from the ponds.

We are working to refine our estimates with more realistic actual emissions data that better reflects the underlying water chemistry and operating dynamics for future emissions inventories. No recent sampling has identified the presence of EO in the water entering the ponds. But even if it were present, the pH and reactivity of the ponds would react any residual EO into glycols, which: (1) do not pose the same potential risks of EO, and (2) are essentially non-volatile, and would not be emitted from the pond in any event. From this, we conclude that prior reporting was not representative of actual EO emissions from the ponds and expect that any actual EO pond emissions will be de minimis.

Finally, please note that the any EO emissions actually associated with the ponds at Conroe fall beyond the scope of the MON rule and EPA's assessment of related residual risks.

3) Clarification of EO emissions previously reported for P-G-125.

Pump P-G-125 circulates pump seal fluid (water seal) for a vacuum pump in the AAU unit. The emissions from this source are associated with a drain that takes the water in the seal bottom to a non-hazardous process wastewater storage tank. That drain was previously identified as a continuous stream. The drain is sampled as part of the LDAR program. In an initial sampling campaign, an analysis of the seal fluid discharge was completed four times. All but one sample was non-detect for EO emissions. The only sample with detectable EO emissions was used to establish the maximum EO quantity that could be discharged into the drain system. Similar to the pond emissions, overly conservative estimates which presumed nearly complete volatilization of this amount and the existence of a continuous stream were used for the purposes of establishing regulatory applicability. These same worst-case emissions estimates were later re-purposed without further review for reporting in the emissions inventory.

As with the ponds, the values reported in previous emissions inventories for the P-G-125 drain significantly overstate actual EO emissions. We have confirmed that this drain is not in continuous use. Rather, it is only used during maintenance on the pump, and has only been used five times since November 2011. Given the highly intermittent use, any EO emissions from this source would either be zero (in most years where not used) or de minimis (where used for a short period during a single maintenance event with no continuous flow and only if EO was present in the first place). Separately, similar to the ponds, any EO present during these infrequent maintenance events would react with the water present to transform into glycols. Thus, the level we have been reporting is not representative of and significantly overstates actual EO emissions. We are working to refine prior emissions estimates with more realistic actual emissions data for future emissions inventories.

4) The JAU units do not use EO, and have no associated EO emissions.

The JAU units are subject to MON, but do not use or contain EO. There is a disconnect between the way data is reported for Texas Emissions Inventories and the analysis required for MACT/MON applicability. Regulatory applicability is based on the functional use of equipment at the plant and how it works as part of designated process units. Emissions Inventories are based on geographic locations where releases occur. In some cases (including this one) that is distinct from the functional nexus with the process unit that occupies the space. This is why EO emissions are

reported with the equipment leak fugitives in the JAU unit for purposes of the Texas Emissions Inventory.

The JAU unit does not use EO as a raw material, and does not produce EO as a product, co-product, or by-product. There are no process streams that function within the JAU unit process that contain EO in quantifiable amounts. However, the plant maintains an EO circulation loop (for safety reasons) that is used to convey and distribute EO throughout the plant to processes that actually consume EO (see response 1 above). This recirculation loop passes through the physical geographic boundaries of the JAU units. Although there are no connections within the JAU boundaries to the JAU process, there are equipment leak fugitive components (valves, flanges, etc.) that are part of the recirculation loop that are physically within the boundaries of the JAU. As the material in the recirculation loop passes through the JAU boundaries, there is a potential for fugitive equipment leaks. Because of the geographic location, they are reported in the emissions inventory based on their physical location within the JAU geographic boundaries even though they are not part of the JAU process unit as defined in MACT standards.